

Improvised Teaching Aids:

Instructional materials are learning resources that help in teaching and learning processes, which help the teacher to deliver his lesson during the course of his teaching. They can also be referred to as relevant and cheaply selected tools or equipment that are usually incorporated in the teaching/learning process in order to boost or enhance effective teaching and learning activities in the classroom or any other environment where formal educational system takes place. National Teachers Institute (NTI, 2007). In a nut shell, improvised instructional materials are teaching materials design and produce from the available local materials in order to enhance effective teaching and learning in schools.

Use of Improvised Instructional Materials in Teaching Biology:

Improvised instructional material is a method or way of minimizing loss of equipment and materials and an inexpensive method of widening the scope of inquiry. Improvised instructional material is a meaningful attempt towards finding suitable substitute or alternative to conventional science materials. Due to state of our nation's economy, Teachers, students, school authorities and communities should engage in improvising instructional materials in order to:-

- Develop in students and teachers adequate skill for improvisation. This will generate interest and motivation for indigenous technology.
- Have practical and physical links between science and theory
- Eradicate the menace of lack of or inadequate instructional materials for science
- Sensitize both students and teachers that alternatives for some of the conventional science teaching materials are possible.
- Achieve the set out educational objectives through the use of improvised instructional materials in teaching.

- Biology teachers should find out those materials that could be improvised without;
Much cost
Many complications in handling
- And losing the originality of the concepts to be taught.

Examples of Improvised Instructional Materials :

S/No	Standard Equipment	Improviseable alternative Items	Function
1	Tropod stand	Unused stove frame	For supporting during heating
2	Bunsen burner	Kerosene stove	Source of heat
3	Funnel	Plastic bottle open at base	For transferring liquid
4	Plant press	Wood/plywood, khaki cloth, shoe buckles.	For drawing moisture or water away from plants
5	D.N.A model	Stripped cardboard	For illustration in genetic
6	Round bottom flask	Electric bulbs	For measuring liquid volume
7	Measuring cylinder	Graduated feeding bottle	For measuring liquid volume
8	indicators	Flower extract (after conducting chemical analysis)	As indicator for acid and base
9.	Indicator catching net	Mosquito net wooden ring/iron, thread and needle	For collecting of insects or catching insects
10	Test-tube holder	Cloths hanger (peg)	For holding test-tube during

Improvised instructional materials make teaching biological concepts more interesting to both students and teachers in the classroom, improvised materials are usually simple and may not have perfect finishing, because they are made from local raw resources that are acceptable to students. Improvised instructional materials help Biology and other science students to realize that science has to do with ordinary things and will possibly motivate them to carry out experiments and learning activities themselves using such improvised materials

Role of Students in Improvisation:

Improvisation helps to change students attitudes towards science. This portrays that if we can encourage students to partake in the improvisation exercise, they stand a better chance of having a positive attitudinal change towards sciences. Therefore, students should be engaged in the collection, assembling, fixing, e.t.c of some basic and non-injurious items for improvisation. This will relate the abstracts concept, theories, laws e.t.c. of Biology to the real life situations.

Role of School Authorities in Improvisation :

The fundamental role to be played by the school authorities are:

- To assist the teachers financially in the production of improvised materials.
- Solicit the support of parents to assist to procure improvised materials or materials meant for improvisation.
- Render motivations to deserving teachers
- Provide storage facilities for the improvised materials in order to maximize usage within their life span.
- Solicit the support of experts within the community to assist in the improvisation exercise

Role of Government in Improvisation:

State and Federal Governments have important roles to play in the improvisation exercise at all levels of the educational system. Among are the following

Improvisation should be made a core course in all fields of sciences by curriculum developers.

- Government can provide fund/cash to motivate teachers and book authors on improvisation
- Government can mount public enlightenment campaign on the importance improvisation to the society as an integral part of technological development.

Conclusion:

Improvisation tends to remove abstraction(s) in learning theories because the products of improvisation are tangible, handy and concrete. Improvised instructional materials must be very safe to use during demonstrations and experiments. It must be hazard free or danger free. The product must not be capable of inflicting injuries on the user or person operating it. Improvised instructional materials should be used effectively in teaching Biology and other science subjects, at all levels of education.